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The Affordable Care Act, Medical Homes, and Childhood Asthma: A Key Opportunity for Progress



THE GEORGE WASHINGTON UNIVERSITY
SCHOOL OF PUBLIC HEALTH
AND HEALTH SERVICES

THE DEPARTMENT OF HEALTH POLICY





The Affordable Care Act, Medical Homes, and Childhood Asthma:

A Key Opportunity for Progress

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About this Brief:

This is the first in a series of policy briefs that will examine key provisions in the Patient Protection and Affordable Care Act and highlight opportunities for improving childhood asthma care. Authored by researchers from the George Washington University School of Public and Health Services, Department of Health Policy, the series is funded by a grant from the Merck Childhood Asthma Network, Inc. and by the RCHN Community Health Foundation as part of a major gift to the Department of Health Policy to support the Geiger Gibson/RCHN Community Health Foundation Research Collaborative.

Introduction

The medical homes provisions of the Affordable Care Act offer a major opportunity to advance high quality, cost-efficient health care for children with asthma. This policy brief examines evolving national medical homes policy in a childhood asthma context. Following a brief background that examines childhood asthma and explores the origins and evolution of medical homes policy (a concept developed with children in mind), the brief then describes how the Affordable Care Act can advance the implementation of medical homes policies to improve health outcomes for children with asthma.

Background

Childhood Asthma

Asthma is one of the nation's top chronic pediatric conditions -- with one in seven children affected -- and one of its most costly.¹ Asthma is particularly common among low income and medically underserved children; community health centers report that the condition affects one in five children and some communities report prevalence rates as high as 40 percent. The proportion of children with asthma has been growing steadily. Asthma is associated with increased emergency department visits, hospitalizations, and an increased risk of mortality. Asthma is also associated with other childhood conditions, such as obesity.

The opportunity to "bend the cost curve" while improving health outcomes is considerable where childhood asthma is concerned. Asthma is one of the costliest pediatric health conditions, accounting for nearly 14% of all pediatric hospitalizations in 2008. Asthma is associated with a 50% increase in the risk that a pediatric emergency department visit will result in an inpatient admission. Medicaid directors report that expenditures for asthma-related hospitalization and emergency department care rank among their highest pediatric health care costs. According to a State Medicaid Directors Letter issued in 2001 by the Center for Medicaid and State Operations, 1995 data from 28 states showed 36,000 hospitalizations of Medicaid-eligible children at a cost of nearly \$102 million, as well as 765,000 outpatient visits costing nearly \$56 million.² Trending these figures forward, we estimate that 58,930 Medicaid-eligible children experienced asthma-related hospital discharges in 2008, with total costs exceeding \$582 million.³

¹ Soni A. *The Five Most Costly Children's Conditions, 2006: Estimates for the U.S. Civilian Noninstitutionalized Children, 0-17*. Statistical Brief # 424. April 2009. Agency for Healthcare Research and Quality. Rockville MD.; Markus, AR, Lyon M, Rosenbaum S. Changing Policy: The Elements for Improving Childhood Asthma Outcomes. Prepared for the Merck Childhood Asthma Network, Inc. The George Washington University School of Public Health and Health Services, February 23, 2010.

Available at: http://www.mcanonline.org/pdf/MCAN_Policy_Report_Final.pdf

² SMD Letter #01-011 from Timothy Westmoreland (January 19, 2001)

<http://www.cms.gov/SMDL/SMD/itemdetail.asp?filterType=dual,%20keyword&filterValue=asthma&filterByDID=0&sortByDID=1&sortOrder=ascending&itemID=CMS056652&intNumPerPage=10> (Accessed June 22, 2010)

³GW analysis of 2008 HCUP data

Medical Homes

The medical home model originated with the American Academy of Pediatrics; it embodies concepts of comprehensiveness, holistic patient-centered care, cultural appropriateness, an emphasis on care in the community, the use of cost-effective treatments and, in recent years, the use of electronic health information to improve clinical quality, report on health outcomes, and better manage patient health.

By design, the concept of a medical home seeks to reduce duplication, excess cost, and inefficiencies in the delivery system as well as promote access to more integrated health care. Medical homes are viewed as particularly useful for medically complex patients, including children with special needs, who require multiple health care services and case management. In recent years the model has gained popularity as a means of improving primary care for all patients.⁴

Medical Home Provisions in the Patient Protection and Affordable Care Act

The Patient Protection and Affordable Care Act (popularly known as the Affordable Care Act) for the first time establishes the medical home as formal public policy. The Affordable Care Act provides a statutory definition of the medical home model, defining a medical home as:

a mode of care that includes (A) personal physicians; (B) whole person orientation; (C) coordinated and integrated care; (D) safe and high-quality care through evidence informed medicine, appropriate use of health information technology, and continuous quality improvements; (E) expanded access to care; and (F) payment that recognizes added value from additional components of patient-centered care.⁵

Using this concept, the Affordable Care Act provides for a series of major reforms to advance the concept in both public and private health insurance:

As a quality measure for health insurance coverage and employee health benefit plans - The Affordable Care Act directs the Secretary of HHS to develop national quality measures for use by both group health plans and health insurance issuers selling both individual and group health insurance coverage.⁶ The Affordable Care Act identifies the use of medical homes by private insurers and group health plans as one of the quality measures that the Secretary is required to develop.

As a specific model to be tested by the Center for Medicare and Medicaid Innovation (CMI) - The Affordable Care Act⁷ establishes the Center for Medicare and Medicaid Innovation whose purpose is to “test innovative payment and service delivery models to reduce program expenditures under

⁴ Shin, P., Ku, L, Jones, E, Finnegan B, Rosenbaum, S. (May 27, 2009) Financing Community Health Centers As Patient- and Community-Centered Medical Homes: A Primer. The Commonwealth Fund.

⁵ PPACA §3502(c).t

⁶ PHSA §2717, added by PPACA §1001

⁷ Section 1115A of the Social Security Act, added by PPACA §3201

[Medicare and Medicaid] while preserving or enhancing the quality of care furnished.” A “patient centered medical home model” represents a specific type of model to be tested.

As a specific Medicaid service model for individuals with chronic illness, including asthma - The Affordable Care Act creates a new state Medicaid option⁸ to permit individuals with one or more chronic conditions - specifically including asthma - to select a “health home.” This model builds on previous Medicaid pilots and demonstrations whose results can further guide the development of a medical home for Medicaid beneficiaries.⁹ A health home may consist of either an individual provider (such as a community health center or comprehensive primary care clinic) or a health team. The health home would be responsible for all patient care, as well as a specified set of “health home” services consisting of (i) comprehensive care management (ii) care coordination and health promotion; (iii) comprehensive transitional care, including appropriate follow-up, from inpatient to other settings; (iv) patient and family support (including authorized representatives); (v) referral to community and social support services, if relevant; and (vi) use of health information technology to link services, as feasible and appropriate.

Beginning January 2011, the federal government will make planning grants available to states who desire to create health homes, and during the first 8 quarters of state participation, the federal government will pay an enhanced federal Medicaid contribution rate of 90%. States that elect to create health homes will be expected to meet a series of quality improvement, reporting, cost saving measurement, electronic health records, and coordination activities as a condition of participation.

Community health center expansion - In addition to specific provisions targeted expressly on the development and use of medical homes, the Affordable Care Act also makes an \$11 billion investment in the expansion of community health centers over the FY 2011-FY 2015 time period. Known for both the comprehensiveness of their care and their accessible locations, health centers play an extensive role in caring for children with asthma. Health centers are intimately familiar with the necessary elements of managing medically and socially complex patients, including chronic care disease management, as well as providing enhanced primary care.¹⁰ Furthermore, health centers are well equipped to implement quality initiatives and employ the tools of health information technology, including data collection and storage on reportable measures which can be used to evaluate their performance.¹¹

⁸ SSA §1945, added by PPACA §2703

⁹ Fact Sheet: Medicare-Medicaid Advanced Primary Care Demonstration Initiative. September 16, 2009
<http://healthreform.gov/newsroom/factsheet/medicalhomes.html>

¹⁰ Shin P., Ku L, Jones E, Finnegan B, Rosenbaum S. (May 27, 2009) Financing Community Health Centers As Patient- and Community-Centered Medical Homes: A Primer. The Commonwealth Fund.

¹¹ Hayashi AS, Jones E, Stevens D, Shin P, Finnegan B, Rosenbaum S. (August 7, 2009) Health Center Data Warehouses: Opportunities and Challenges for Quality Improvement. Geiger Gibson / RCHN Community Health Foundation Research Collaborative. Policy Research Brief No. 13.

Childhood Asthma as a Key Focus of Medical Homes Implementation

As Table 1 shows, the very qualities that make a health care model a medical home are the qualities that are essential to high quality pediatric asthma care. Thus, pediatric asthma emerges as an extremely important diagnosis on which the medical home model can be built.

The medical home and low income children - In the case of low income children, the medical homes model can evolve for children with asthma through partnerships among state Medicaid programs, Medicaid managed care providers, health centers and pediatric practices, along with the Centers for Medicare and Medicaid Services, which could aid in advancing such a model by developing specific guidance that promotes a broad Medicaid response to childhood asthma as part of an overall quality improvement initiative. This initiative could tie into the pediatric quality measures developed by the federal government under the Children's Health Insurance Program Reauthorization Act of 2009. This initiative includes the development of voluntary measures for Medicaid and CHIP addressing quality of care and access to services, and includes measures about asthma management.

The medical home and privately insured children- In the case of privately insured children covered by employers or (beginning January 1, 2014) through state health insurance Exchanges, the management of pediatric asthma emerges as a central means by which national quality measurement related to the use of medical homes can be advanced. The extent to which the medical homes concept has been adapted to private insurance and is in use for children with asthma becomes a powerful and specific measure of the degree to which the medical home model is in use by private payers. Indeed, the use of a medical home model in private insurance has become particularly important following passage of health reform, with the enactment of a ban on the use of pre-existing condition exclusions in the case of children under 19. Given the fact that children with asthma can no longer experience coverage denials and delays, the quality and comprehensiveness of asthma treatment and management becomes a far more important aspect of insurers' efforts to promote health care quality and efficiency.

In sum, the widespread prevalence of childhood asthma -- and thus the opportunity to test medical home performance -- as well as the availability of updated clinical practice guidelines, creates a robust opportunity for quality improvement and performance measurement across both public and private insurance. The very nature of high quality asthma management, the immediate cost impact of high quality management, and its responsiveness to intervention create an ideal scenario for medical home performance measurement. High quality care in the medical home environment also provides an opportunity to assess measures of closure of the disparity "gap" in positive health outcomes among impoverished and medically underserved children. Children with asthma stand to benefit significantly from such a cross-payer effort.

Table 1. Measuring Medical Homes Performance Through the Use of Childhood Asthma Treatment and Management

NCQA Physician Practice Connections PCMH Standards	Asthma Evidence
ACCESS & COMMUNICATION	<ul style="list-style-type: none"> • Among rural families whose children have asthma, those who had difficulty accessing care had more hospitalizations and emergency department visits.¹² • Caregivers of urban children (Baltimore, MD) with significant asthma morbidity have demonstrated low concordance with physicians about the prescription of controller medications for their children, indicating that caregiver-physician communication, especially about symptom control and medication, is especially important for asthma management.¹³ • Community health workers can be of great value for reaching and working with families where children have asthma. Well-trained community health workers effectively deliver health education and case management services, and connect families with community and medical resources, and the formal health care system.¹⁴
PATIENT TRACKING & REGISTRY	<ul style="list-style-type: none"> • Tracking program Fight Asthma Milwaukee, where Children’s Hospital and Health System collaborated with five hospitals in the Milwaukee, WI region, developed a web-based registry that monitors emergency department care for children with asthma and wheeze, and identifies asthma burden and opportunities for intervention. Key elements of the registry include reporting functions and help screens for the user.¹⁵ • Patient registries based on claims data have been shown to be useful in helping integrated delivery systems identify patients not receiving appropriate preventive asthma care (such as using a controller medication, per HEDIS® measurements) and to then conduct follow-up and outreach for the patient.¹⁶

¹² Horner SD. Childhood Asthma in a Rural Environment: Implications for Clinical Nurse Specialist Practice. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice*. 2008. 22; 4:192 – 198.

¹³ Riekert KA, Butz Am, Eggleston PA et al. Caregiver-Physician Medication Concordance and Undertreatment of Asthma among Inner City Children. *Pediatrics*. 2003; 111:e214-220.

¹⁴ Krieger, J, Takaro TK, Song L, Beaudet N, Edwards K. A Randomized Controlled Trial of Asthma Self-Management Support Comparing Clinic-Based Nurses and In-Home Community Health Workers. *Arch Pediatr Adolesc Med*. 2009; 163(2): 141-149; Butz AM, Malveaux FJ, Eggleston P, Thompson L, Schneider S, Weeks K, Huss K, Murigande C, Rand CS. Use of Community Health Workers with Inner-City Children Who Have Asthma. *Clin Pediatr*. 1994;33(3):135-141.; Fisher EB, Strunk RC, Sussman LK, Sykes RK, Walker MS. Community Organization to Reduce the Need for Acute Care for Asthma Among African American Children in Low-Income Neighborhoods: The Neighborhood Asthma Coalition. *Pediatrics*. 2004;114;116-123.

¹⁵ Kelly KJ, Walsh-Kelly CM, Christenson, P et al. *Emergency Department Allies: A Web-Based Multihospital Pediatric Asthma Tracking System*. *Pediatrics*. 2006; 117(4):63S-70S.

¹⁶ Scherzo-Levin J, DeVita N, Timbie J. Impact of Pay-for-Performance Contracts and Network Registries on Diabetes and Asthma HEDIS® Measures in an Integrated Delivery Network. *Med Care Res Rev*. 2006; 63:14S-28S.

NCQA Physician Practice Connections PCMH Standards	Asthma Evidence
CARE MANAGEMENT	<ul style="list-style-type: none"> • Written asthma action plans are an important tool for asthma management for children and families and have been found to be most effective when they are symptom-based and include tools for self-monitoring and self-management. They have been shown to be most effective with more severe asthma and have been associated with reduced utilization of health care services such as emergency department visits.¹⁷ • Care management by school nurses for poorly controlled asthma in urban school children including education, monitoring of health status, and care coordination for disease management and environmental trigger mitigation, resulted in decreased school absenteeism, decreased hospitalizations and acute care visits, and improved student knowledge about asthma.¹⁸ • A dose response seems to exist between the intensity of asthma education intervention delivered and the reduction in health care utilization such as emergency department and acute care visits, with those children and families receiving more intensive education and increased time with a health educator or counselor having fewer unscheduled health care visits.¹⁹
PATIENT SELF-MANAGEMENT SUPPORT	<ul style="list-style-type: none"> • Educational programs for the self-management of asthma in children and adolescents were associated with improvements in many outcome measures, including lung function, self-efficacy, absenteeism from school, number of days of restricted activity, number of visits to an emergency department, and nights disturbed by asthma, with the strongest effects seen among children with more severe asthma.²⁰ • The most effective disease management/asthma management programs for children emphasize self-management behaviors as well as asthma education.²¹

¹⁷ Ducharme FM, Bhogal SK. The Role of Written Action Plans in Childhood Asthma. *Curr Opin Allergy Clin Immunol*. 2008; 8:177-188.

¹⁸ Levy M, Heffner B, Stewart T, Beeman G. The Efficacy of Asthma Case Management in an Urban School District in Reducing School Absences and Hospitalizations for Asthma. *J Sch Health*. 2006; 76:320-324.

¹⁹ Coffman JM, Cabana MD, Halpin HA, Yelin EH. Effects of Asthma Education on Children's Use of Acute Care Services: A Meta-Analysis. *Pediatrics*. 2008; 121:575-596.

²⁰ Guevara JP, Wolf FM, Grum CM, Clark NM. Effects of Educational Interventions for Self-Management of Asthma in Children and Adolescents: Systematic Review and Meta-Analysis. *BMJ*. 2003; 326:1308-1309.

²¹ Blaiss MS. Asthma Disease Management: A Critical Analysis. *Ann Allergy Asthma Immunol*. 2005; 95:S10-16.

NCQA Physician Practice Connections PCMH Standards	Asthma Evidence
ELECTRONIC PRESCRIBING	<ul style="list-style-type: none"> High quality asthma care for children involves the correct combination of medications for prevention and control of symptoms, along with the prevention of exacerbations.²² Electronic prescribing, especially in the context of electronic health records with clinical decision support and features such as allergy alerts, tracking drug over- or under- use, and drug-to-drug interactions can be a very useful tool for physicians managing the asthma care of children.
TEST TRACKING	<ul style="list-style-type: none"> Accurate symptom evaluation is a critical component of successful asthma management. This is especially so in children and families who face extra challenges because of illness severity, sociodemographics, or health care system characteristics. It has been shown that minority and poor children with asthma benefit from utilization of symptom-time peak expiratory flow rate (PEFR) as a symptom measurement tool. Children in this population who used peak expiratory flow meters when symptomatic had a lower asthma severity score, fewer symptom days, and lower health care utilization than children who did not utilize this measurement, indicating the positive impact of accurate and objective symptom evaluations.²³

²²Martinez FD. Managing Childhood Asthma: Challenge of Preventing Exacerbations. *Pediatrics*. 2009;123: S146-S150; Mattke S, Martorell F, Sharma P, Malveaux F, Lurie N. Quality of Care for Childhood Asthma: Estimating Impact and Implications. *Pediatrics*. 2009;123: S199-S204.

²³Yoos HL, Kitzman H, McMullen A, et al. Symptom monitoring in childhood asthma: a randomized clinical trial comparing peak expiratory flow rate with symptom monitoring. *Annals of Allergy, Asthma and Immunology*. 2002; 88;3:283-291.

NCQA Physician Practice Connections PCMH Standards	Asthma Evidence
REFERRAL TRACKING	<ul style="list-style-type: none"> • Per the NAEPP guidelines ²⁴access to specialty care by an asthma specialist is necessary when a child's asthma is severe or difficult to control. Good communication about referrals among pediatric primary care and specialist practitioners occurred when physicians had access to electronic charts and practices were capable of rapid information sharing.²⁵ • Tailoring interventions to an individual child's sensitivities and allergies is a key component of highly effective interventions designed to reduce environmental triggers and provide guidance about health behaviors to improve asthma management.²⁶ Having access to allergy testing to understand a child's individual sensitivity to allergens is very important for providers and families. • Referrals to specialty care as needed are important for proper asthma management. Among a survey of Medicaid-insured children, having seen a specialty provider and having had follow - up visits with a primary care provider were associated with less underuse of controller medications²⁷.
PERFORMANCE REPORTING & IMPROVEMENT	<ul style="list-style-type: none"> • Clinical decision support embedded into electronic health records has been shown to help improve asthma care and improve physician adherence to the NAEPP guidelines, including increasing the number of controller medications, spirometry testing, and updated asthma action plans in a range of pediatric practices.²⁸ • A continuous quality improvement component, incorporating a technical assistance team and community health workers, in an intervention for children with asthma improved asthma outcomes and processes of care measures, including a reduction in emergency department visits and asthma severity assessments, and improved family-reported psychological measures.²⁹ • Medicaid health plans that provide feedback and/or notification about asthma events and medications were positively associated with having preventer medication prescriptions filled for children, particularly for children with severe asthma.³⁰ This is a useful tool to ensure children receive consistently high quality asthma care.

²⁴ National Heart, Lung, and Blood Institute. *National Asthma Education and Prevention Program Expert Panel Report 3: Guideline for the Diagnosis and Management of Asthma*. Bethesda, MD: National Institutes of Health; 2007

²⁵ Stille CJ, McLaughlin TJ, Primack WA et al. Determinants and Impacts of Generalist- Specialist Communication about Pediatric Outpatient Referrals. *Pediatrics*. 2006; 118; 1341-1349.

²⁶ Evans R III, Gergen PJ, Mitchell H, Kattan M, Kerckmar C, Crain E, Anderson J, Eggleston P, Malveaux F, Wedner HJ. A randomized clinical trial to reduce asthma morbidity among inner city children: Results of the National Cooperative Inner-City Asthma Study. *J Pediatr*. 1999;135:332-338.

²⁷ Finkelstein JA, Lonzano P, Farber HJ, Miroshink I, Lieu TA. Underuse of Controller Medications Among Medicaid-Insured Children with Asthma. *Arch Pediatr Adolesc Med*. 2002; 156:562-567.

²⁸ Bell LM, Grundemeier R, Localio R et al. Electronic Health Record- Based Decision Support to Improve Asthma Care: A Cluster- Randomized Trial. *Pediatrics*. 2010; 125:e770-777.

NCQA Physician Practice Connections PCMH Standards	Asthma Evidence
<p>ADVANCED ELECTORONIC COMMUNICATIONS</p>	<ul style="list-style-type: none"> • Using a web-based monitoring system for children with asthma to report symptoms, asthma management, and quality of life to their health care provider resulted in improved health outcomes including a decrease in peak flow readings and fewer reports of limitations in their daily activity, when compared to a control.³¹ • Offering interactive, Internet-based asthma education at outpatient visits, compared to traditional print and verbal asthma education, resulted in children with asthma having increased asthma knowledge, decreased emergency department visits, and reduce asthma morbidity and burden.³² • Internet-based, store-and-forward video assessment of children's use of asthma medications, along with test forwarding using monitoring tools in patients' homes has appeared to be effective and well received by patients and caregivers. Through the use of this advanced electronic communication tool, emergency department visits and hospital admissions for asthma were avoided³³

²⁹ Fox P, Porter PG, Lob SH, Boer JH, Rocha DA, Adelson JW. Improving Asthma-Related Health Outcomes Among Low-Income Multiethnic, School-aged Children: Results of a Demonstration Project that Combined Continuous Quality Improvement and Community Health Worker Strategies. *Pediatrics*. 2007; 120:e902-911.

³⁰ Cooper WO, Ray WA, Arbogast PG et al. Health Plan Notification and Feedback to Providers is Associated with Increased Filling of Preventer Medications for Children with Asthma Enrolled in Medicaid. *J Pediatr*. 2008; 152:481-488.

³¹ Guendelman S, Meade S, Benson M et al. Improving Asthma Outcomes and Self- Management Behaviors of Inner-City Children. *Arch Pediatr Adolesc Med*. 2002; 156:114-120.

³² Krishna S, Francisco BD, Ballas AE et al. Internet – Enabled Interactive Multimedia Asthma Education Program: A Randomized Trial. *Pediatrics*. 2003; 111:503-310.

³³ Chan DS, Callahan CW, Sheets SJ, Moreno CN, Malone FJ. An Internet-based store-and-forward video home telehealth system for improving asthma outcomes in children. *American Journal of Health-System Pharmacy*. 2003; 60;19:1976-1981.

Recommendations

The United States Department of Health and Human Services (HHS) could take a number of steps to assure full utilization of policy and program implementation tools to advance the management and treatment of childhood asthma.

1. Developing performance measures that provide important information

A key step is the development of measures that can be used by all payers and that provide important information about how the health care system responds to childhood asthma. Examples include:

- The percentage of patients evaluated during at least one office visit for frequency of daytime and night-time asthma symptoms.³⁴
- The percentage of pediatric patients with persistent (mild, moderate, or severe), not well controlled, or very poorly controlled asthma who were prescribed either the preferred long-term control medication (inhaled corticosteroid) or an acceptable alternative treatment.³⁵
- The percentage of children with asthma who have been appropriately evaluated for environmental triggers such as environmental tobacco smoke, dust mites, cats, dogs, molds/fungi, or cockroaches, either by history of exposure and/or by allergy testing.³⁶

2. Incorporation of pediatric asthma measures into health home/medical home performance in private health insurance and in implementing the health center expansion

As HHS develops medical homes measures for private health insurers and as an implementation tool in the expansion of health centers, incorporating pediatric asthma measures will help assure that health care providers that treat high numbers of pediatric patients implement responsive programs and evidence-based interventions for children. Both private and public health insurers can link pediatric asthma measures to performance incentives in order to encourage the types of clinical practices in the treatment and management of asthma that are emblematic of medical homes. Asthma measures also represent a particularly effective means by which health centers can measure their performance as medical homes while capturing information on both clinical care and measures of health that shed important light on the overall health of their communities.

³⁴ Existing quality measure from National Quality Forum (NQF)

³⁵ Existing quality measure from National Quality Forum (NQF)

³⁶ Existing quality measure from HRSA Health Disparities Collaboratives

3. Guidance to state Medicaid and CHIP programs on improving the quality of health care for children with asthma

It has been a decade since the federal government issued pediatric asthma guidance to state Medicaid agencies; advances in asthma management and treatment, coupled with broad changes in Medicaid as a result of health reform, make this an ideal time to focus on pediatric asthma as an entry point into strengthening Medicaid's performance in clinical quality improvement and cost efficiency. In order to support Medicaid health homes growth and overall improvement in the quality of care, CMS could update its 2001 guidance. Updated guidance would address advances in clinical quality, including updated, evidence-based clinical practice guidelines that establish methods for assessing asthma and its severity and level of control, treating asthma, controlling environmental triggers as well as the conditions that frequently accompany asthma, and providing health education, case management, and asthma action plans. Additionally, CMS could provide updated guidance on the use of school health services, expanding and enhancing coverage, testing payment and performance measurement innovations, and the use of medical homes flexibility to achieve higher health system performance.

4. Developing implementation tools to support the development of EHRs that are designed to support childhood asthma quality improvement

As states move to implement the Medicaid reforms related to meaningful use of electronic health records, core performance measurement related to meaningful use will grow over time to encompass additional measures that provide greater insight into the quality of care for specific sub-populations including children. As the meaningful use of EHRs evolves, additional measures could focus on asthma assessment, pharmacological treatment, and the inclusion of asthma action plans as part of the EHR infrastructure. Furthermore, EHRs offer the potential to include additional measures of preventive care for children and to capture family history of chronic disease. These steps further build prevention and education into the clinical encounter for children and families with asthma. Focusing now on EHR capabilities in relation to childhood asthma treatment and management -including clinical quality improvement, public reporting, and the sharing of information - will assure that the potential for the EHR to reach one of the most significant childhood conditions from a health and health care cost perspective is realized.

5. Making childhood asthma a national public health priority for prevention activities and evidence-based interventions that are features of medical homes

As the nation designs a prevention strategy, the role of medical homes becomes critical for children with asthma, since medical homes become a means of bridging direct health care services and public health. The effective management of childhood asthma involves closely coordinated activities between clinical care and public health interventions, particularly in communities in which pediatric asthma is widespread and disparity gaps exist in positive health outcomes. As a result, and given the additional tool created by health information technology that enable cross-

system communication, the amelioration of childhood asthma should be treated as a primary activity in connecting medical homes to a national public health prevention strategy.

For example, the Affordable Care Act calls for CDC to award grants to fund Community Health Workers (CHWs) to promote positive behaviors and outcomes in medically underserved areas, implement evidence-based interventions in the home, and strengthen linkages with clinical care settings. Randomized controlled interventions have shown that CHWs are effective and cost-effective in providing asthma-related environmental interventions in the home. Thus, the treatment and management of childhood asthma is a strong candidate for early focus of a community health worker strategy. Community health workers could be promoted as essential members of health teams positioned to support medical homes and working in collaboration with local primary care providers and other community resources. Workers could transition among health care providers and health care settings, furnishing case management to high risk patients, reducing risk factors/mitigating exposures to allergens and irritants in the home, and placing priority on high risk/high cost conditions. In short, childhood asthma represents a key condition on which to develop the strategy of supportive health teams positioned to provide many of the necessary elements of a medical home, including coordination, education, and prevention activities, which are also key tenets of high quality asthma management and care.